

WHAT IS CLAIMED IS:

- 1 1. A backlight unit comprising:
2 a chassis having a bay, wall means defining the bay, an aperture
3 opening to the bay, and an optical panel that includes at least one light
4 management feature, the optical panel having one side forming a wall
5 portion of the wall means;
6 a light emitting structure placed within the bay to light a
7 two-dimensional area on the one side of the optical panel; and
8 a bracket for quick installation and removal of the light emitting
9 structure through the aperture to and from the bay.
- 1 2. The backlight unit as claimed in claim 1,
2 wherein the bracket includes a support structure carrying the
3 light emitting structure; and
4 wherein the light emitting structure includes at least one linear
5 light source and a power control circuit coupled to the linear light
6 source.
- 1 3. The backlight unit as claimed in claim 2,
2 wherein the at least one linear light source includes a parallel
3 arrangement of a plurality of linear lamps.
- 1 4. The backlight unit as claimed in claim 3,
2 wherein the support structure includes a frame having a
3 predetermined line and two sides spaced along the predetermined line,
4 and a circuit mount including two portions, each extending from one of
5 the two sides in a remote direction from the other of the two sides; and
6 wherein, at the two sides, the frame holds two ends of each of the
7 plurality of linear lamps, respectively, and the circuit mount holds the
8 power control circuit.
- 1 5. The backlight unit as claimed in claim 4,
2 wherein the frame includes two frame halves interposing

3 therebetween the two ends of each of the plurality of linear lamps, the
4 two frame halves are of the identical structure.

1 6. The backlight unit as claimed in claim 4,
2 wherein the frame includes two frame halves, at least one of
3 which is formed with a plurality of cutouts over the entire length of each
4 of the two sides; and
5 wherein a mount rubber holds one of the two ends of each of the
6 plurality of linear lamps within one of the plurality of cutouts.

1 7. The backlight unit as claimed in claim 4,
2 wherein the bracket includes at least one light leak prevention
3 feature.

1 8. The backlight unit as claimed in claim 7,
2 wherein the at least one light leak prevention feature includes a
3 light shield arranged to cover the aperture when the bracket is
4 positioned for installation of the light emitting structure to the bay.

1 9. The backlight unit as claimed in claim 7,
2 wherein the chassis includes a guide for the frame of the support
3 structure to slide relative to the chassis; and
4 wherein the light leak prevention feature includes a second light
5 shield arranged to cover a clearance between the frame of the support
6 structure and the guide of the chassis.

1 10. The backlight unit as claimed in claim 9,
2 wherein the bay within the chassis includes a first region for
3 receiving the frame of the support structure and two second regions for
4 receiving the two portions of the circuit mount of the support structure,
5 respectively;
6 wherein the first region includes guide spaces defined by the
7 guide, the guide spaces are open to the second regions, respectively,
8 and the second regions are greater in width than the guide spaces;

9 wherein the frame of the support structure within the guide
10 defines within each of the guide spaces the clearance; and
11 wherein the support structure includes the second light shield
12 between each of the two sides of the frame and the adjacent one of the
13 two portions of the circuit mount.

1 11. The backlight unit as claimed in claim 9,
2 wherein the chassis and the support structure include means for
3 bringing the bracket into firm engagement with the chassis.

1 12. The backlight unit as claimed in claim 4,
2 wherein the at least one light management feature includes a
3 first light management feature and a second light management feature.

1 13. The backlight unit as claimed in claim 12,
2 wherein the first light management feature is a light diffusing
3 feature within the optical panel and the second light management
4 feature is one selected from a group consisting of a brightness
5 enhancing film and a light diffusing film.

1 14. The backlight unit as claimed in claim 13,
2 wherein the chassis is dividable into four sections, each having
3 at least one frame portion providing a groove receiving one of four sides
4 of the optical panel.

1 15. A display device comprising:
2 at least one light control device; and
3 a backlight unit coupled to the at least one light control device,
4 wherein the backlight unit includes:
5 a chassis having a bay, wall means defining the bay, an aperture
6 opening to the bay, and at least one optical panel that includes at least
7 one light management feature,
8 the at least one optical panel having one side forming a wall
9 portion of the wall means, to thereby prevent exposure of the at least

10 one light control device to the bay;
11 a light emitting structure placed within the bay to light a
12 two-dimensional area on the one side of the at least one optical panel;
13 and
14 a bracket for quick installation and removal of the light emitting
15 structure through the aperture to and from the bay.

1 16. The display device as claimed in claim 15,
2 wherein the at least one light control device includes a first light
3 control device and a second light control device;
4 wherein the at least one optical panel includes a first optical
5 panel between the first light control device and the bay and a second
6 optical panel between the second light control device and the bay; and
7 wherein the light emitting structure is placed within the bay
8 between the first and second optical panels.

1 17. The display device as claimed in claim 16,
2 wherein the first and second control devices include a first liquid
3 crystal display panel and a second liquid crystal display panel,
4 respectively, and attached to the chassis;
5 wherein the first and second optical panels have sides,
6 respectively, forming wall portions of the wall means; and
7 wherein the light emitting structure placed within the bay
8 between the first and second optical panels lights a two-dimensional
9 area on the side of the first optical panel and another two-dimensional
10 area on the side of the second optical panel.

1 18. The display device as claimed in claim 15,
2 wherein the at least one light management feature includes a
3 light diffusion feature within the at least one optical panel.

1 19. The display device as claimed in claim 15,
2 wherein the at least one light management feature includes a
3 first light management feature in the form of a light diffusion feature

4 within the at least one optical panel, and a second light management
5 feature, the second light management feature being one selected from a
6 group consisting of a brightness enhancing film and a light diffusing
7 film.

1 20. A method for light source replacement of a display device,
2 wherein the display device includes:
3 a light control device including a liquid crystal display panel; and
4 a backlight unit coupled to the light control device, wherein the
5 backlight unit includes:
6 an optical panel including at least one light management feature;
7 and
8 a light emitting structure placed to light a two-dimensional area
9 on one side of the optical panel,
10 the method comprising:
11 providing a chassis having a bay, wall means defining the bay, an
12 aperture opening to the bay;
13 attaching the optical panel to the chassis such that the one side
14 thereof forms a wall portion of the wall means;
15 providing a bracket for quick installation and removal of the light
16 emitting structure through the aperture to and from the bay; and
17 pulling the bracket out of the chassis to remove the light emitting
18 structure for light source replacement.